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Agrément Certificate

04/4100

Product Sheet 1

JAMES HARDIE BUILDING PRODUCTS

HARDIEBACKER CEMENT BACKER BOARD

This Agrément Certificate Product Sheet⁽¹⁾ relates to HardieBacker⁽²⁾ Cement Backer Board, for internal use as an intermediate substrate for ceramic and natural stone tiling.

(1) Hereinafter referred to as 'Certificate'.

(2) HardieBacker is a registered trademark of James Hardie International Finance B.V.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.

KEY FACTORS ASSESSED

Properties in relation to fire — the product has a reaction to fire classification of A1 and is 'non-combustible' as defined in the national Building Regulations (see section 6).

Resistance to mechanical damage — the product will accept the normal impacts likely to occur in service (see section 7).

Durability — the product has acceptable durability and will have a life equal to that of the structure onto which it is fixed (see section 9).



The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Fourth issue: 7 September 2016

John Albon — Head of Approvals

Claire Curtis-Thomas

Originally certificated on 6 May 2004

Construction Products

Chief Executive

The BBA is a UKAS accredited certification body — Number 1113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, HardieBacker Cement Backer Board, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	B2(1)	Internal fire spread (linings)
Comment:		The product is unrestricted by this Requirement. See section 6 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The use of the product satisfies the requirements of this Regulation. See section 9 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.5	Internal linings
Comment:		The product is classified as 'non-combustible' and therefore satisfies the requirements of this Standard, with reference to clause 2.5.1 ⁽¹⁾⁽²⁾ . See section 6 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for the product under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23(a)(i)(iii)(iv)(b)(i)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.
Regulation:	34(a)(b)	Internal fire spread – Linings
Comment:		The product is unrestricted by this Regulation. See section 6 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.3) and 3 *Delivery and site handling* (3.1 and 3.4) of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of HardieBacker Cement Backer Board, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 9.2 *Wall and ceiling finishes*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 12467 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 HardieBacker Cement Backer Board comprises HardieBacker EZ Grid (plain and profile face) and 12 mm Cement Board (plain only), fibre-reinforced cement tile cement boards for internal use.

1.2 The product is made from fibre-reinforced sheets which satisfy the requirements for Category C material to BS EN 12467 : 2012.

1.3 The product characteristics are given in Table 1.

Characteristic (unit)	HardieBacker EZ Grid	HardieBacker 12 mm
Thickness (mm)*	6	12
Width (m)*	0.8	0.8
Length (m)*	1.2	1.2
Board weight (kg)	9.0	13.8

1.4 Ancillary components necessary for installation of the product and included in the assessment are:

- HardieBacker screws for timber, M5 x 32 mm⁽¹⁾ in green and M5 x 25 mm⁽¹⁾ in grey
- HardieBacker screws for steel (M4.8 x 30 mm)⁽¹⁾.

(1) Minimum head diameter 8 mm.

1.5 Other items or components which may be used with the product, but which are outside the scope of this Certificate, are:

- glassfibre mesh reinforcing tape — 50 mm wide, alkali-resistant
- ceramic tiles — to BS EN 14411 : 2012
- ceramic tile adhesive — to BS EN 12004 : 2007
- grout to BS EN 13888 : 2009
- James Hardie Score and snap knife — for cutting boards.

2 Manufacture

2.1 The product is manufactured by batch blending, followed by the Hatschek process and high-pressure steam autoclaving.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

3 Delivery and site handling

3.1 The product is delivered on wrapped pallets, each pallet weighing approximately 540 kg for HardieBacker EZ Grid, or 690 kg for 12 mm Cement Board. It can be offloaded either using mechanical handling equipment or by manually removing individual boards.

3.2 Each board is marked with the product name, unique manufacturing code, the appropriate classification to ISO 8336 : 2009 and CE marking in accordance with BS EN 12467 : 2012.

3.3 The boards should be stored flat, undercover, and on a dry, level surface. Stacks of loose boards should not exceed one metre in height.

3.4 The product includes crystalline silica and reference should be made to EH40/2005 *Occupational Exposure Limits*, 2005. In particular, when cutting, drilling or sanding in confined areas, dust levels should be controlled using suitable extraction equipment.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on HardieBacker Cement Backer Board.

Design Considerations

4 Use

4.1 HardieBacker Cement Backer Board is satisfactory for use on internal walls and floors as an intermediary substrate to ceramic and natural stone tiling.

4.2 The boards are suitable for use as part of a system comprising tiles, cement-based tile adhesive and grout, to install a stable, water-resistant tile substrate in showers, bathrooms and wet areas (excluding shower trays).

4.3 Walls and sub-floors to be tiled should comply with the requirements of BS 5385-1 : 2009 and BS 5385-3 : 2014 respectively, including the provision of movement joints as appropriate. Where necessary, reference should also be made to BS 5385-4 : 2009.

5 Practicability of installation

The product is designed to be installed by competent operatives experienced with this type of material.

6 Properties in relation to fire



6.1 The boards will not adversely affect the fire resistance of the wall on which they are installed.

6.2 When tested to BS EN ISO 1182 : 2002 and BS EN ISO 1716 : 2002, samples of HardieBacker EZ Grid and 12 mm Cement Backer Board achieved a reaction to fire classification of A1* in accordance with BS EN 13501-1 : 2007 and are therefore classified as 'non-combustible' as defined in the various national Building Regulations.

7 Resistance to mechanical damage

7.1 When tested in accordance with BBA methods, the product satisfied the requirements for a Category I2 opaque vertical movement as defined in Table 3.2 of MOAT 43 : 1987.

7.2 Test results indicate that the product can accept, without damage, the normal impacts likely to occur in service.

7.3 Wall-mounted fittings should be fixed through the product into the wall behind, using suitable fixings. The recommendations of the manufacturer should be followed.

8 Maintenance

As the installed product is inaccessible and has suitable durability (see section 9), maintenance is not required. However, any damage occurring before enclosure must be repaired (see section 13).

9 Durability



Provided the boards are used and installed in accordance with this Certificate and the Certificate holder's instructions, and are fixed to suitable, stable and durable backgrounds, they will have a life equal to that of the structure onto which they are fixed.

Installation

10 General

10.1 HardieBacker Cement Backer Board is for installation on internal walls and floors of new and existing buildings, in accordance with the provisions of this Certificate and the Certificate holder's instructions.

10.2 Cutting of boards can be performed by scoring a straight edge using the James Hardie Score and snap knife, and snapping upwards along the score line.

10.3 Large cut-outs can be made using a circular saw with a diamond-tipped HardiBlade saw blade. Small holes may be drilled using a carbide-tipped masonry bit, or scored out as above and broken out with a hammer. Reference should be made to section 3.4.

10.4 The fixings (see section 1.4) used must be of sufficient length:

- in wooden sub-floors and wall framing — to penetrate 19 mm into the substrate, or the full thickness of the substrate (whichever is less)
- in metal wall framing — to penetrate the metal framing by at least three full threads.

11 Procedure

Floor installations

11.1 A sub-floor of minimum 15 mm plywood to BS EN 636 : 2012 or minimum 18 mm tongue-and-groove flooring grade chipboard is laid. Joint spacing must not exceed 450 mm centres for 18 mm boards.

11.2 Deflection must not exceed L/360 for ceramic tiles and L/720 for natural stone. Excessive flex will cause the tiled floor to crack.

11.3 On sound existing structures, all existing floor coverings must be removed and any damaged sections of the sub-floor replaced to give a clean, flat surface.

11.4 Boards must be cut so that they fit the floor area, with joints staggered in a stretcher-bond brick pattern. Four board corners should not meet at one point.

11.5 Board joints should not align with the underlying sub-floor joints.

11.6 A 3 mm wide gap should be allowed between the edges of the boards and walls or cabinet bases. This should be filled with a good-quality sanitary sealant.

11.7 A levelling bed of tile adhesive is applied to the clean and dry sub-floor, using a 6 mm square notched trowel.

11.8 The board is firmly and evenly embedded in the adhesive, with the board edges in moderate contact.

11.9 The fixings specified in section 1.4 are set flush with the board surface, at 200 mm centres. For the 12 mm Cement Board, the fixings should be set back 15 mm from the board edges and 50 mm back from board corners. For the 6 mm EZ Grid board, the fixing positions are marked with circular indentations on the grid.

Wall installations

11.10 Masonry walls of new buildings must be designed and constructed in accordance with BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006 and their UK National Annexes. Walls of existing buildings must be sound and watertight.

11.11 Framing grade timber studs or galvanized steel framework must be provided at 600 mm centres. Timber studs should be nominally 75 mm by 50 mm or 100 mm by 50 mm; steel framework should be a minimum of 0.59 mm thickness.

11.12 Care must be taken to ensure that studs are straight and properly aligned.

11.13 Corners should be either solid blocked or otherwise reinforced, for example using a 35 mm by 35 mm by 0.8 mm galvanized steel angle.

11.14 In wet areas, a corner flashing is used to provide additional protection to the framing members.

11.15 Boards may be installed horizontally or vertically, using the fixings specified in section 1.4. The fixings are set flush with the surface, at 200 mm centres, and set back between 12 mm and 15 mm from the board edges and 50 mm from corners.

11.16 HardieBacker EZ Grid board perimeters and joints must be directly supported by frame members. Hardie Backer EZ Grid must be fixed at maximum stud centres of 400 mm and not 600 mm.

11.17 A wet-area sealant complying with the requirements of BS 6213 : 2000 and BS EN ISO 11600 : 2003 must be applied at corner junctions of boards and tiles.

12 Tiling

12.1 The surface of the boards is wiped with a damp sponge to remove residual dirt and dust.

12.2 Joints between boards are filled with the tile adhesive to be used, feathered out to form a 150 mm wide joint and taped using 50 mm wide, alkali-resistant, glassfibre mesh tape.

12.3 Tiles are installed and grouted in accordance with the tile manufacturer's instructions, BS 5385-1 : 2009, BS 5385-3 : 2014 and BS 5385-4 : 2009, and conventional good practice.

13 Repair

Under normal conditions of occupancy, the boards are unlikely to suffer damage, but should any occur repairs are carried out by replacing damaged boards and re-tiling.

Technical Investigations

14 Tests

Tests were carried out to determine:

- resistance to hard body impact
- tensile bond strength to ceramic tiles
- resistance to soft body impact
- effect of humidity and exposure to water
- water absorption
- pull-through strength of fixings.

15 Investigations

15.1 Classifications were made to BS EN 12467 : 2004 on the basis of test data supplied on:

- dimensions
- bending strength
- apparent density
- resistance to freeze/thaw
- resistance to water soak
- resistance to soak/dry cycling

- resistance to heat/sun cycling
- water impermeability.

15.2 Evaluation was made of existing data relating to:

- fire propagation to BS 476-6 : 1989
- surface spread of flame to BS 476-7 : 1997
- reaction to fire to BS EN 13501-1 : 2007.

15.3 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BS 476-6 : 1989 + A1 : 2009 *Fire tests on building materials and structures — Method of test for fire propagation for products*

BS 476-7 : 1997 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*

BS 5385-1 : 2009 *Wall and floor tiling — Design and installation of ceramic, natural stone and mosaic wall tiling in normal internal conditions — Code of practice*

BS 5385-3 : 2014 *Wall and floor tiling — Design and installation of internal and external ceramic and mosaic floor tiling in normal conditions — Code of practice*

BS 5385-4 : 2009 *Wall and floor tiling — Design and installation of ceramic and mosaic tiling in specific conditions — Code of practice*

BS 6213 : 2000 + A1 : 2010 *Selection of construction sealants — Guide*

BS EN 636 : 2012 *Plywood — Specifications*

BS EN 1996-1-2 : 2005 *Eurocode 6 — Design of masonry structures — General rules — Structural fire design*

NA to BS EN 1996-1-2 : 2005 *UK National Annex to Eurocode 6 — Design of masonry structures — General rules — Structural fire design*

BS EN 1996-2 : 2006 *Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*

NA to BS EN 1996-2 : 2006 *UK National Annex to Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*

BS EN 12004 : 2007 + A1 : 2012 *Adhesives for tiles — Requirements, evaluation of conformity, classification and designation*

BS EN 12467 : 2012 *Fibre-cement flats sheets — Product specifications and test methods*

BS EN 13888 : 2009 *Grouts for tiles — Requirements, evaluation of conformity, classification and designation*

BS EN 13501-1 : 2007 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN 14411 : 2012 *Ceramic tiles — Definitions, classifications, characteristics, evaluation of conformity and marking*

BS EN ISO 1182 : 2002 *Reaction to fire tests for building products — Non-combustibility test*

BS EN ISO 1716 : 2002 *Reaction to fire tests for building products — Determination of the heat of combustion*

BS EN ISO 11600 : 2003 + A1 : 2011 *Building construction — Jointing products — Classifications and requirements of sealants*

ISO 8336 : 2009 *Fibre-cement flat sheets — Product specification and test methods*

MOAT No 43 : 1987 *UEAtc Directives for Impact Testing Opaque Vertical Building Components*

16 Conditions

16.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

16.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

16.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

16.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

16.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

16.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.